ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Best Management Practices to Prevent the Contamination of Groundwater and Surface Water with Perchlorate When Discharging Fireworks

Perchlorate has emerged as a chemical of concern in the United States over the last ten years. A compound of chlorine and oxygen (ClO_4^-), perchlorate has been widely used in solid fuels for rockets and missiles, as well as in explosives, fireworks, road flares, air-bag inflation systems, lubricating oils, nuclear reactors and electronic tubes. Perchlorate is also used in tanning and leather finishing, electroplating, aluminum refining, rubber manufacture, and in paint and enamel production. It also occurs naturally in certain types of fertilizers imported from Chile. Perchlorate can disrupt the body's synthesis of thyroid hormones, which are essential for metabolism and normal growth and development. The populations most sensitive to these health effects are pregnant women, developing fetuses, infants, children and individuals who have low levels of thyroid hormones. Some states have adopted drinking water standards or advisory levels from 1 part per billion (ppb) to 18 ppb. The NH Department of Environmental Services is currently studying the chemical, and may propose a drinking water public health goal for perchlorate in the future.

Fire chiefs, water superintendents, and local elected officials can use several best management practices to minimize the likelihood that fireworks will contaminate drinking water supplies. These practices include prohibiting or minimizing the use of fireworks in areas where perchlorate could easily contaminate ground and surface drinking water supplies. To assist local officials, DES can provide maps of wellhead and source water protection areas for community water supplies. Alternatively, fireworks that do not contain perchlorate could be used. However, DES understands that most fireworks used are imported from outside the United States and that it is very difficult to verify the composition of fireworks that are obtained from foreign countries. Other best management practices include quickly removing firework "shells" or wrappings from the environment after blasting off fireworks, and removing the physical residue from blasting devices before the perchlorate is able to leach into the soil and groundwater.

For more information about the discharge of fireworks and the protection of surface and groundwater quality, contact Brandon Kernen, DES, at (603) 271-0660 or bkernen@des.state.nh.us. For more information about the health effects associated with exposure to perchlorate, contact Pam Schnepper at (603) 271-3994 or pschnepper@des.state.nh.us. Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.state.nh.us or visit our website at www.des.nh.gov/dwgb. All of the bureau's fact sheets are on-line at www.des.nh.gov/dwg.htm.

Note: This fact sheet is accurate as of January 2007. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.